



# **Snowmass CompF2 – Theo. Calc. and Simulation**

Peter Boyle, [V. Daniel Elvira](#), Ji Qiang



# The Particle Bunch on Zoom

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# Towards the CompF2 (TCandS) report

- Official Snowmass deadlines [consistent with P5 constraints]
  - Frontiers/TGs produce outlines of their reports (Feb. 2021 – May 2021)
  - Frontiers/TGs produce preliminary reports with community feedback (April 2021 – July 2021)
  - White Papers (WP) uploaded by authors to the online system (July 2021)
  - Community Summer Study (CSS) (July 11-20, 2021 in UW Seattle)
  - Final reports from Frontiers, Steering Group produces Snowmass Executive Summary, Snowmass Draft Report and Peer Review, Snowmass Final Report (August – October 2021)
- Proposed CompF2 deadlines [for internal consistency]
  - CompF2 collects **additional information**\* (Nov. 2020 – March 2021)
  - Abstracts and early draft of WPs made available to CompF2 (March 2021)
  - CompF2 produces an outline of the report (April 2021)
  - CompF2 produces a Preliminary TG report (April 2021 – June 2021)
  - Iteration consistent with official Snowmass deadlines

\* Explained in next slide

# Towards the TCandS report

*Physics Frontiers (PFs)* propose future physics programs and associated experimental facilities

*Computing Frontier (CompF)* identifies S&C challenges and propose solutions

- *Near future (10-15 yrs)*: focus on upgraded or new experiments underway or already approved
- *Far future*: focus on experimental facilities and physics programs beyond 2040
  - *Important caveat*: S&C technology beyond 2040 almost impossible to predict, but **software tools and computing infrastructure to make the case for far future programs are near future needs** (e.g. fast and accurate accelerator simulation tools, theory calculations, generator packages, simulation toolkits)

*CompF2 report content* must focus on **near future needs, challenges, work plan roadmap** for both near future and far future physics programs and facilities

1. *Input* from August CompF workshop, LOIs, October CPM, PFs workshops, liaisons, WP drafts
2. *Reformulate* into quantitative statements on S&C needs and challenges: software tool requirements, physics accuracy and compute performance gaps, rapidly changing computing technologies
3. *Define* a roadmap for a work program to address the challenge based on US interests and strengths

*Additional information* in the previous slide refers to quantitative info to go from 1 to 2 and 3

- Idea and content of a proposed survey will be discussed by P. Boyle next

# Towards the TCandS report

*As we move towards drafting the CompF2 report we must focus*

- **Less** on our interesting individual physics ideas (more relevant to the PFs)
- **More** on reformulating physics programs into S&C needs, challenges and defining a S&C roadmap consistent with US needs, interests, and well integrated into the international community

*CompF2 conveners will be requesting overarching, vision WPs with S&C needs, challenges, work programs well motivated by physics programs (large and small)*

- In most cases, these WPs have already been proposed in LOIs
  - CompF2 meetings for early WPs overview and consensus that community coverage is adequate

*D,J,P main editors of CompF2 report, will seek to form writing teams for content contributions*

- **Length:** 20-50 pages?
- **Content:** sections on sub-domains such as cosmology calculations, accelerator modeling, physics generators, detector simulation, perturbative calculations, non-perturbative calculations (LQCD)?
- **Contributing editors:** candidates are the current sub-domain contacts or other volunteer experts

*Need to discuss today (and in subsequent meetings?) how to make the report process open, participative, inclusive, interactive, iterative* – meetings format, content, frequency if any

# Important request

*For CompF2 sub-domain contact people*

- Send Peter, Ji, Daniel information of mailing lists, Slack channels, or any other mean of communication you have setup within your sub-domain
  - The information will be made publicly available in the Snowmass web page for newcomers to find their way into CompF2 activities
- Actually, if you are attending the meeting today, please add the information to the Live Notes